IN THE CLAIMS

Claims 1-9 (cancelled)

Claim 10 (currently amended) A hydrogen sensor comprising:

(a) a dielectric surface material; and

(b) one or more columns of metal nanoparticles on said surface, wherein nanogaps between the nanoparticles close when exposed to a threshold hydrogen concentration, wherein closure of said nanogaps effects a detectable electronic response along the column of nanoparticles when said column is incorporated into an electrical circuit, wherein said metal nanoparticles comprise alloys of Pd and Ag, wherein multiple columns of metal nanoparticles comprise varying ratios of Pd and Ag so as to effect the detection of hydrogen over a range of concentrations with the same device.

Claim 11 (cancelled)

Claim 12 (currently amended) The hydrogen sensor of claim [[11]] 10, wherein said electrical response is selected from the group consisting of a change in resistivity, a change in conductivity, a change in capacitance, a change in conductivity, and combinations thereof.

Claim 13 (currently amended) The hydrogen sensor of claim [[11]] 10, wherein said metal nanoparticles comprise Pd.

Claim 14 (cancelled)

Claim 15 (cancelled)

Claim 16 (currently amended) The hydrogen sensor of claim [[11]] 10, wherein said sensor provides for detection of hydrogen in transformers.

Claims 17-20 (cancelled)